

**Amendment to the Claims:**

1. (Cancelled).

2. (Currently Amended) The A detector for a nuclear imaging system, the detector comprising: as set forth in claim 1, wherein the

a plurality of sockets which each support an array of individual detector elements, each socket including:

a plurality of electrical connectors, and

a socket alignment structure that includes rigid pins

and;

a circuit board for receiving sockets, which circuit board includes:

a plurality of electrical connections that electrically connect with the electrical connectors, and

the a mating circuit board alignment structure that includes rigid pins and apertures of like cross-section with the socket alignment structure rigid pins that mate with the socket alignment structure rigid pins to align the sockets and the individual detector elements to the circuit board; and

a means for mounting a collimator to the circuit board in alignment with the circuit board.

3. (Previously Presented) The detector as set forth in claim 2, wherein the rigid pins are not used for transmitting electrical signals between the sockets and the circuit board.

4. (Currently Amended) The detector as set forth in claim 1 2, wherein the collimator mounting means includes a frame and further including:

an aligning means for aligning the frame and the circuit board,

5. (Previously Presented) The detector as set forth in claim 4, wherein the individual detector elements are separated by interfaces or gaps and wherein the

collimator includes mechanical elements which define a plurality of apertures, the mechanical elements being aligned with the interfaces or gaps such that the apertures are centered on and aligned with the individual detector elements.

6. (Previously Presented) The detector as set forth in claim 4, wherein the aligning means includes:

- at least two alignment holes defined in the frame, and
- at least two matching holes defined in the circuit board.

7. (Currently Amended) The detector as set forth in claim 5 6, wherein the frame has a rectangular face including:

- a longer dimension, and
- a shorter dimension,
- the at least two frame alignment holes being disposed along the shorter dimension to reduce an effect of thermal dilatation.

8. (Currently Amended) The detector as set forth in claim 4 2, wherein the socket alignment structures includes rigid pins positioned diagonally from each other.

9. (Currently Amended) The detector as set forth in claim 8 3, wherein the connectors are pins of ~~relatively-soft~~ metal that is sufficiently soft relative to the rigid pins that the conductor pins tend to deform as the sockets are received on the circuit board.

10. (Cancelled).

11. (Currently Amended) ~~The  $\Delta$  method as set forth in claim 10;~~  
~~wherein the~~ of assembling a detector for a nuclear imaging system comprising:  
inserting each of a plurality of sockets, which each include an array of  
individual detector elements, a plurality of electrical connectors, and socket alignment  
structures into a circuit board which includes a plurality of electrical connections

which electrically connect with the electrical connectors as the sockets are inserted, and circuit board alignment structures, which mate with the socket alignment structures as the socket is inserted to align the arrays of detector elements with the circuit board and each other; and

aligning and mounting a collimator mounting means includes a frame to the circuit board which frame mounts a collimator in fixed alignment thereto, hence to the circuit board and the individual detector arrays, such that the collimator mounting frame is aligned with the arrays of detector elements.

12. (Previously Presented) The method as set forth in claim 11, wherein the individual detector elements have interfaces therebetween and the collimator has mechanical elements, which define apertures, the mechanical elements being aligned with the individual detector element array interfaces.

13. (Currently Amended) A detector for a nuclear imaging system, the detector comprising:

a substrate including a plurality of sets of electrically conductive holes and alignment holes of a first precise cross section and a plurality of sets of electric connection pin receiving holes; and

a plurality of detector modules each detector module including a plurality of electrically conductive connection pins ~~which are sufficiently soft to tend to bend~~ and rigid alignment pins of the first precise cross section, each set of alignment holes being configured to receive the alignment pins of one of the modules, the electrically conductive pins being softer than the alignment pins and easier to bend than the alignment pins, such that the alignment pins maintain the detector modules in alignment with each other and the circuit board even when the electrically conductive connection pins bend during receipt into the electric connection pin receiving holes.

14. (Previously Presented) The detector as set forth in claim 13, wherein each detector module includes:

individual detector elements which are electrically connected to the electrically conductive connector pins, the individual detector elements being

mounted in a rectangular array separated from each other by a rectangular grid of interfaces.

15. (Previously Presented) The detector as set forth in claim 13, wherein the substrate defines a plurality of substrate alignment holes and further including:

a frame which defines alignment holes, which align with the substrate alignment holes.

16. (Previously Presented) The detector as set forth in claim 15, wherein the frame has a rectangular face which includes:

a longer dimension, and

a shorter dimension; and

the alignment holes including two alignment holes defined in the shorter dimension to reduce an effect of thermal dilatation.

17. (Previously Presented) The detector as set forth in claim 15, wherein the frame includes a collimator mounting means for mounting the collimator in precise alignment therewith, the collimator including:

radiation blocking element that form a rectangular grid which overlays the interface grids of the individual detector elements which are mounted to the substrate when the collimator is mounted in and aligned with the frame that is aligned with the substrate.

18. (Previously Presented) A detector for a nuclear imaging system, the detector comprising:

a plurality of detector elements selectively securable to a circuit board, the detector elements being separated by gaps;

a collimator comprising mechanical elements which define a plurality of apertures; and

a collimator alignment mechanism, said collimator alignment mechanism aligning the mechanical elements with the gaps separating the detector elements such that the apertures are aligned with the detector elements.

19. (Previously Presented) The detector of claim 18 further comprising a detector element alignment mechanism, said detector element alignment mechanism aligning the detector modules on the circuit board.

20. (Previously Presented) The detector of claim 18 wherein each aperture is aligned with an individual detector element.

21. (New) The method as set forth in claim 11, further including:  
mounting the collimator in the frame including inserting collimator alignment pins into corresponding alignment holes in the frame.